REMARKS

1. Rejections

Claims 1, 2, 4, and 5 stand rejected under 35 U.S.C. § 103(a), as allegedly rendered obvious by Japanese Patent No. 2000-105093 to Haruhiko in view of U.S. Patent No. 2,017,201 to Bossart et al. ("Bossart"). Moreover, the Office Action has made the rejections in this Office Action final. Applicant respectfully disagrees and respectfully requests that the Examiner withdraw the finality of the rejections.

2. Finality of the Rejections

Claims 1, 2, 4, and 5 stand rejected as allegedly rendered obvious by Haruhiko in view of Bossart. Moreover, the Office Action has made these rejections of claims 1, 2, 4, and 5 in the above-captioned patent application final. Specifically, the Office Action asserts that claims 1, 2, 4, and 5 "are drawn to the same invention claimed in the application prior to the entry of the submission under 37 C.F.R. §1.114, and could have been finally rejected on the grounds and art recorded in the next Office Action if they had been entered in the application prior to entry under 37 C.F.R. §1.114." Office Action , Page 4, Lines 1-5. Applicants respectfully disagree.

The claims in a new application may be finally rejected in the first Office Action when "all of the claims of the new application . . . would have been properly finally rejected on the grounds and the art of record in the next Office Action if they had been entered in the earlier application." MPEP 706.07(b) (emphasis added.)

In an Advisory Action mailed April 9, 2003, original claims 1-6 were rejected as allegedly rendered obvious by Haruhiko in view of Bossart. The Advisory Action asserted that Haruhiko disclosed or suggested each and every element of original claims 1-6, except that the projection portions extend at an oblique angle relative to the inner fin. Nevertheless, the Advisory Action asserted that Bossart supplied this missing claim element. In response to the Advisory Action, Applicant filed a Request for Continued Examination and amended claims 1 and 4 to incorporate the limitations of original claims 3 and 6, respectively. As such, amended claims 1 and 4 described a heat exchanger in which the plurality of projection portions extend at an oblique angle relative to the inner fin, and extend across the width of the refrigerant path.

In response Applicant's amendments to claims 1 and 4, this Office Action now asserts that "the secondary reference of Bossart teaches oblique protrusions extending across the

width of the [refrigerant] path. Inherently, if a protrusion is oblique with respect to the [refrigerant] path, the protrusion will also extend across the width of the path." Id. at Page 3, Lines 20-22 (emphasis added.) As such, the Office Action asserts that the new limitations of claims 1 and 3 "inherently" are found in Bossart. Nevertheless, in the previous Office Actions in the above-captioned patent application, the Examiner had not raised the issue of whether a protrusion which is oblique with respect to the refrigerant path inherently will extend across the width of the path.

Moreover, "in relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art." MPEP 2112, quoting from Ex Parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis added in original). Because in this Office Action, the Examiner asserts for the first time that Bossart's protrusions inherently extend across the width of the refrigerant path, the Examiner has extended the grounds of rejection from the previous Office Action. Thus, Applicant believes that the Examiner raises new grounds for rejection in this application, and the Examiner has made the rejections in this application prematurely final. Therefore, Applicant respectfully requests that the Examiner withdraw the finality of the rejections in the above-captioned patent application.

3. 35 U.S.C. § 103(a)

Claims 1, 2, 4, and 5 stand rejected as allegedly rendered obvious by Haruhiko in view of Bossart. Specifically, the Office Action alleges that Haruhiko discloses or suggests each and every element as set forth in claims 1, 2, 4, and 5, except that the projection portions extend in an oblique direction relative to the inner fin. Nevertheless, the Office Action alleges that Bossart discloses or suggests these missing elements. Moreover, the Office Action asserts that Haruhiko's perpendicular protrusions extend across "*a width*" of the refrigerant path. See, e.g., Office Action, Page 3, Lines 18-19 (italics added.) With respect to Bossart's protrusions, the Office Action asserts that "inherently, if a protrusion is oblique with respect to the [refrigerant] path, the protrusion will also extend across the width of the path." Id. at Page 3, Lines 20-22 (emphasis added.)

In order for the Office Action to establish a prima facie case of obviousness, at least three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to those of ordinary skill in the art,

to modify the primary reference as proposed by the Office Action. Second, there must be a reasonable expectation of success. Third, the prior art references must disclose or suggest all the claim limitations. MPEP 2143. For the reasons set forth below, Applicant maintains that the Office Action fails to establish a prima facie case of obviousness.

Merely to clarify the claimed invention, Applicant has amended claims 1 and 4 to describe a heat exchanger in which "each of said plurality of projection portions are positioned across the entire width of said refrigerant path." (Emphasis added.) For example, "projection portions 50 and projection portions 51 may be formed integrally with first tube plate 44 and second tube plate 45, respectively, such that the number of parts or components of heat exchanger may not increase. Moreover, because each projection portion 50 and each recess portion 54 are formed across the entire width of refrigerant path 46, recess portions 54 may be in fluid communication with drain path 56. For example, referring to **Fig. 10**, the refrigerant path is represented by twelve (12) vertical, broken lines, and protrusions 50 extend across the entire width of the refrigerant path, i.e., intersect with all of the vertical, broken lines representing the refrigerant path. Similarly, because each projection portion 51 and each recess portion 55 are formed across the entire width of refrigerant path 47, recess portions 55 also may be in fluid communication with drain path 56. Consequently, as shown in **Fig. 11**, water may not be retained between heat transfer tube 43 and outer fin 3 because recess portions 54 and 55 guide the water to drain path 56." See, e.g., Appl'n, Page 7 Lines 27-31; Page 8, Lines 1-4; and **Figs. 8-11**.

In contrast, Haruhiko describes a heat exchanger 1 which may comprise a plurality of tubes 2, and each tube 2 may comprise a first metal tube plate 4 and a second metal tube plate 4. Moreover, a pair of inner fins 53 and 54 may be positioned between the first and the second tube plates 4, and between one and four vertical protrusions 70 may be formed on the first tube plate 4. Nevertheless, protrusions 70 do not extend in an oblique direction relative to inner fins 53 and 54, and do not extend across the entire width of refrigerant paths 2a or 2b, e.g., protrusions 70 only extend across a portion of the width of refrigerant paths 2a or 2b. See, e.g., Haruhiko, **Fig. 10** (emphasis added.)

Bossart describes a heat exchanger which may comprise a plurality of tubes 12. Each tube 12 may be formed by bending a piece of sheet metal so as to form a first tube plate 14 and a second tube plate 15. A first plurality of protrusions 33 may be formed on first tube plate

14, and a second plurality of protrusions 34 may be formed on second tube plate 15. Moreover, in an embodiment, each protrusion 33 may be slanted in a first direction, and each protrusion 34 may be slanted in a second direction, such that a first lengthwise plane which includes protrusion 33 crosses with a second lengthwise plane which includes protrusion 34. See, e.g., Bossart, **Fig. 10**.

As noted above, with respect to Bossart's protrusions, the Office Action asserts that "inherently, if a protrusion is oblique with respect to the [refrigerant] path, the protrusion will also extend across the width of the path." Office Action, Page 3, Lines 20-22 (emphasis added.) Applicant respectfully disagrees.

Specifically, "in relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art." MPEP 2112, quoting from Ex Parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis added in original). Thus, if the allegedly inherent characteristic does not necessarily flow from the teachings of the prior art, the Office Action may not rely on the theory of inherency to supply the elements missing from the prior art. (Emphasis added.)

Applicant maintains that if a protrusion is oblique with respect to the refrigerant path, it does not necessarily or automatically follow that the protrusion extends across the entire width of the refrigerant path. For example, protrusions 36 depicted in **Fig. 5** of the above-captioned patent application are oblique with respect to the refrigerant path, but do not extend across the entire width of the refrigerant path. See, e.g., Appl'n, **Fig. 5** (emphasis added.) Because at least the above-referenced patent application depicts an example of oblique protrusions which do not extend across the entire width of the refrigerant path, the Office Action may not properly rely on the theory of inherency to assert that Bossart's protrusions must extend across the entire width of the refrigerant path. (Emphasis added.)

Moreover, based on Bossart's figures, Applicant maintains that it appears that protrusions 33 and 34 do not extend across the entire width of the refrigerant path. See, e.g., Bossart, **Fig. 10**. For example, as shown in Bossart's **Fig. 10**, there is a gap between a first end and a second end of protrusion 33 and a first end and a second end of the tube plate, respectively. Similarly, there is a gap between a first end and a second end of protrusion 34 and the first end and the second end of the tube plate, respectively. Thus, Haruhiko in view of Bossart at least

fails to disclose or suggest a heat exchanger in which "each of said plurality of projection portions are positioned across the entire width of said refrigerant path," as set forth in amended claims 1 and 4. Therefore, Applicant respectfully requests that the Examiner withdraw the obviousness rejection of claims 1 and 4.

Claims 2 and 5 depend from amended claims 1 and 4, respectively. "If an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (citations omitted). Therefore, Applicant respectfully requests that Examiner also withdraw the obviousness rejection of claims 2 and 5.

CONCLUSION

Applicant respectfully submits that this application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that an interview with Applicant's representatives, either in person or by telephone, would expedite prosecution of this application, we would welcome such an opportunity. Applicant believes that no fees are due as a result of this responsive amendment. Nevertheless, in the event of any variance between the fees determined by Applicant and those determined by the U.S. Patent and Trademark Office, please charge any such variance to the undersigned's Deposit Account No. 02-0375.

Respectfully submitted,

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Enclosure

MARKED-UP COPY OF AMENDMENTS TO THE CLAIMS

Please amend claims 1 and 4, as follows:

1. (amended) A stacked-type, multi-flow heat exchanger comprising:

a plurality of heat transfer tubes, wherein each of said heat transfer tubes comprises:

a first tube plate;

a second tube plate connected to said first tube plate, wherein said first tube plate and said second tube plate form a refrigerant path within said heat transfer tube; and

an inner fin having a wave shape, wherein said inner fin is positioned within said refrigerant path and extends in a longitudinal direction along said refrigerant path;

a plurality of outer fins, wherein said plurality of outer fins and said plurality of heat transfer tubes are stacked alternately; and

a plurality of projection portions formed on at least one of said first tube plates and on at least one of said second tube plates, wherein said plurality of projection portions project into said refrigerant path and extend in an oblique direction relative to said inner fin, said inner fin is connected to said plurality of projection portions, and each of said plurality of projection portions are positioned across the entire width of said refrigerant path.

4. (amended) A stacked-type, multi-flow heat exchanger comprising:

a plurality of heat transfer tubes, wherein each of said heat transfer tubes comprises:

a tube plate, wherein said tube plate comprises a flange portion positioned along a center axis of said tube plate, such that when said tube plate is folded along said center axis, said flange portion forms a refrigerant path within said heat transfer tube; and

an inner fin having a wave shape, wherein said inner fin is positioned within said refrigerant path and extends in a longitudinal direction along said refrigerant path;

a plurality of outer fins, wherein said plurality of outer fins and said plurality of heat transfer tubes are stacked alternately; and

a plurality of projection portions formed on at least one of said tube plates wherein said plurality of projection portions project into said refrigerant path and extend in an oblique direction relative to said inner fin, said inner fin is connected to said plurality of projection portions, and each of said plurality of projection portions are positioned across the entire width of said refrigerant path.